Name: _____   Date: _____
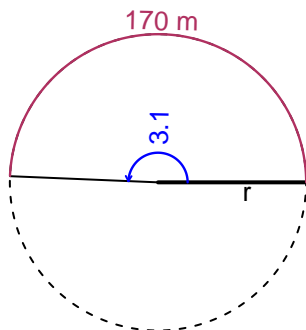
Trig Final (TEST v657)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.
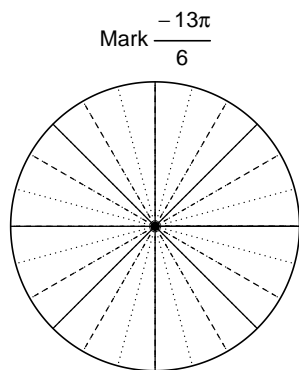
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 170 meters. The angle measure is 3.1 radians. How long is the radius in meters?
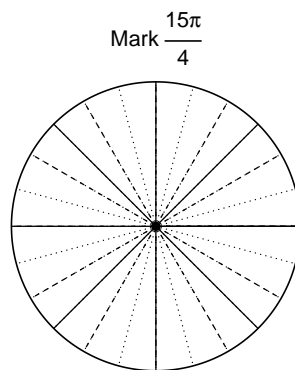

Question 2

Consider angles $\frac{-13\pi}{6}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-13\pi}{6}\right)$ and $\sin\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\frac{-13\pi}{6}$

Find $\cos(-13\pi/6)$

Mark $\frac{15\pi}{4}$

Find $\sin(15\pi/4)$

Question 3

If $\tan(\theta) = \frac{-12}{5}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -4.03$ meters, an amplitude of 8.41 meters, and a frequency of 2.62 Hz. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).